ARCHEOLOGICAL INVESTIGATIONS

FOR CONSTRUCTION PROJECTS:

Chlorination of Water Systems

Skyland Sewer Relocation

SHENANDOAH NATIONAL PARK, VIRGINIA

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UNITED STATES DEPARTMENT OF THE INTERIOR
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ABSTRACT

An archeological survey and literature assessment was performed in Shenandoah National Park, Virginia, August 1979. This work was done in response to planned National Park Service construction in the park. The on-site examinations involved surface examination and subsurface testing at fifteen developed areas in the park where water system chlorination is planned and along two proposed relocation routes for sewer system lines at Skyland Resort. No cultural materials were located in the water chlorination impact areas.

Although a small quantity of modern window glass fragments, nails, and a metal washer fragment were found in test pits along the southern sewer line relocation route (Route 1), no archeological sites or features were uncovered. In addition, evidence of recent grading was observed. Photographs of the Skyland Resort during operation do not show any building at this site.

It is recommended that construction according to the plans in Package No. 260 and IFB 4840-79C be allowed to proceed. If project locations are altered and the revised plans involve additional land disturbance, archeological investigations will be necessary at the new locations.

ACKNOWLEDGEMENTS

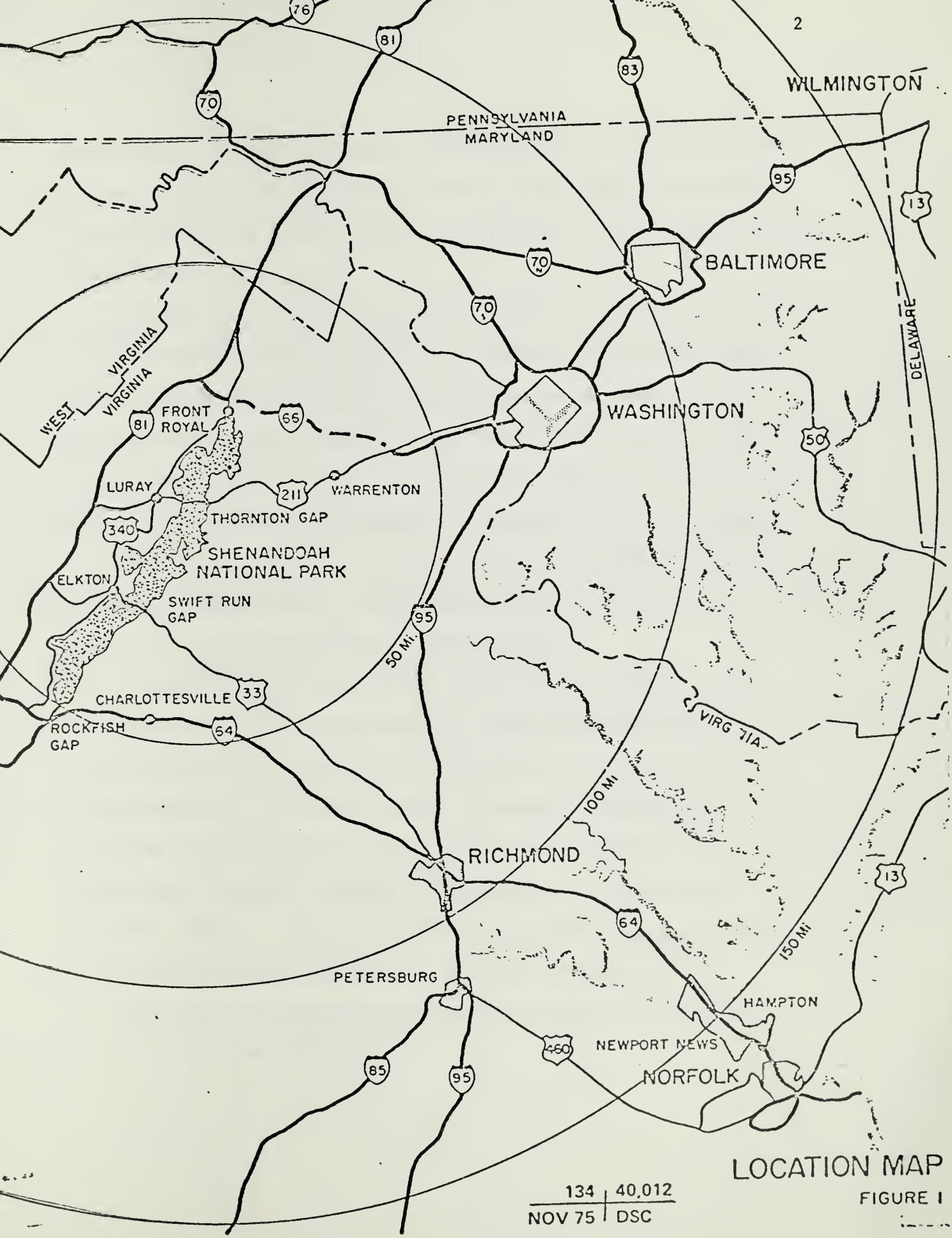
As with any project, completion was made possible through the efforts of many. Superintendent Robert R. Jacobsen and Plumbing Foreman Kirby Rickard provided immeasurable assistance and support. At the Denver Service Center, Laura Soulliere, D. A. Falvey, Jim Pennington, and Sam Drullard shared their knowledge and familiarity with the park and these specific projects. Tracy Nelms washed and labeled the artifacts. Special thanks are extended to Paul Inashima, who shared the burdens of field work in the hot and humid weeks of August. Jackie W. Powell and Kathleen Fiero were supportive throughout all phases of the project. Finally, to all those unnamed but appreciated, their assistance is gratefully acknowledged.

INTRODUCTION

During August 8-16, 1979, investigations were undertaken by Denver Service Center (DSC) Archeologists Paul Inashima and the author in Shenandoah National Park, Virginia (Fig. 1). Specific locations to be impacted by proposed construction projects within developed areas were examined to locate, identify and evaluate the significance of archeological resources. These National Park Service (NPS) construction projects are Package No. 260, Park General, Chlorination of Water Systems and IFB 4840-79C, Sewer System Repairs.

Under Package No. 260, individual water systems in the park will be improved by accomplishing disinfection of water. The Engineers' report, dated July 1979, describes the method by which disinfection will be accomplished and estimates projected construction impacts. Since the project will result in land disturbance, an archeological assessment was deemed necessary. Although the project would affect no sites listed on the National Register of Historic Places or the List of Classified Structures (LCS), no survey had previously been undertaken at specific project sites. Since other archeological surveys in the park have revealed the presence of numerous archeological sites, both prehistoric and historic, it was determined that on-site examinations should be performed.

Of the 23 water systems to be improved, archeological investigations were necessary at 15 because of projected ground disturbance.



LOCATION MAP

FIGURE 1

134 | 40,012

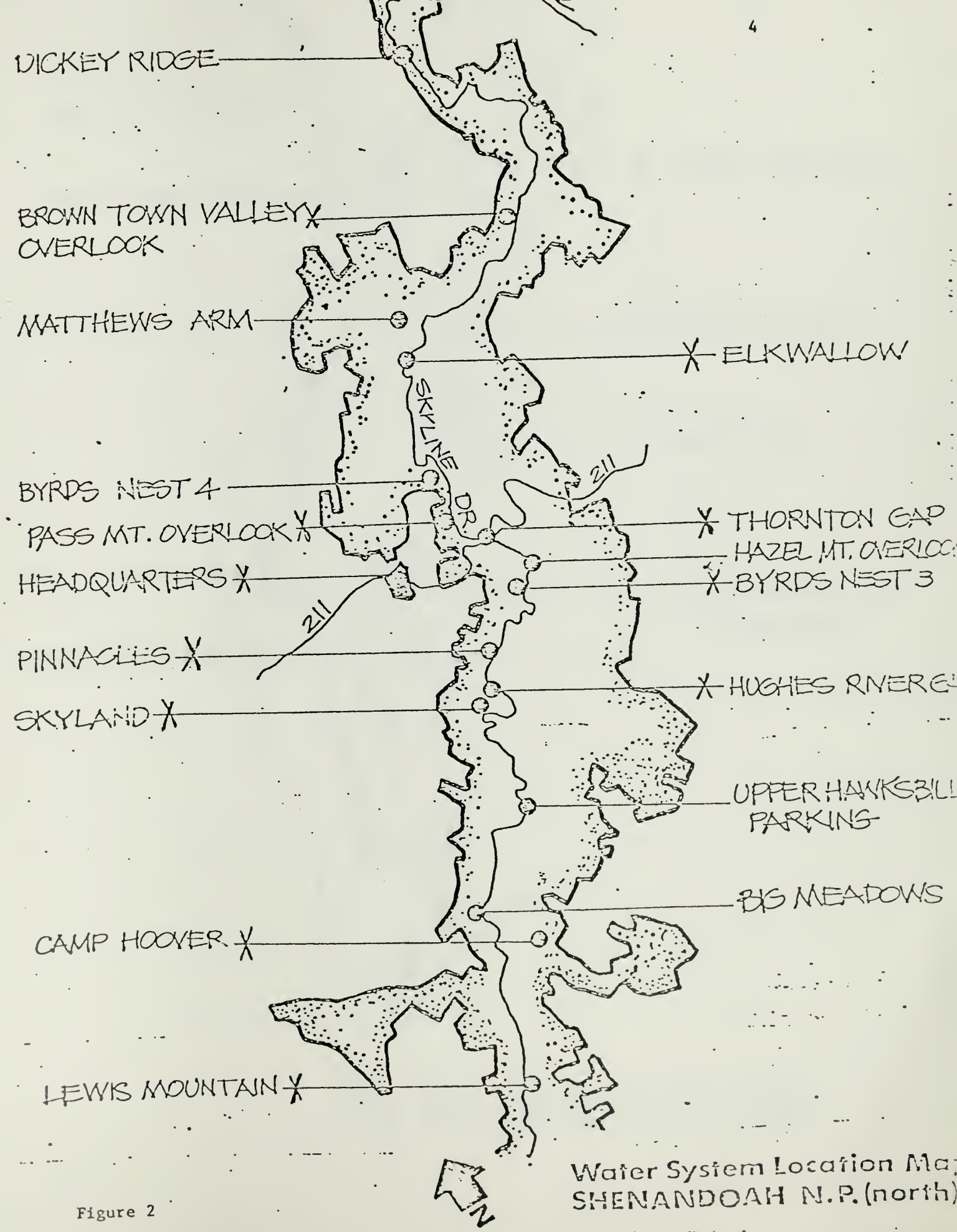
NOV 75 | DSC

(Fig. 2 and 3; locations surveyed marked with X). Construction impacts for each location were estimated at 3 to 6 cubic yards of excavation. A scope of work and a time and cost estimate were prepared and submitted to the engineers.

IFB 4840-79C involves sewer system repairs, including replacement of 44 manholes, 8,500 linear feet of 6-inch sewer, 6,250 linear feet of 8-inch sewer, 1,650 linear feet of 10-inch sewer, removing roots from 3,300 linear feet of sewer, relining 615 linear feet of 6- and 8-inch sewer, replacing 13 manhole frames and covers, and reshaping manhole floors and invest channels (Project Manual 1979). The work is confined to the developed areas of Big Meadows, Skyland, and Loft Mountain. Except for sewer relocation proposed at Skyland, all work will be done in and on existing system facilities.

Skyland was a well-known resort area begun by George Freeman Pollock in the late nineteenth century. Of the extant buildings, Massanutten cabin is listed on the LCS and will be nominated to the National Register of Historic Places. Proximity to Massanutten cabin as well as the potential to contain unknown archeological sites made it necessary to conduct on-site examinations of the proposed sewer relocation routes. A scope of work was prepared for the survey and a time and cost estimate submitted to the project engineer.

Both of the above surveys were combined into one trip to reduce the cost of the investigations.



Water System Location Map
SHENANDOAH N.P. (north)

Figure 2

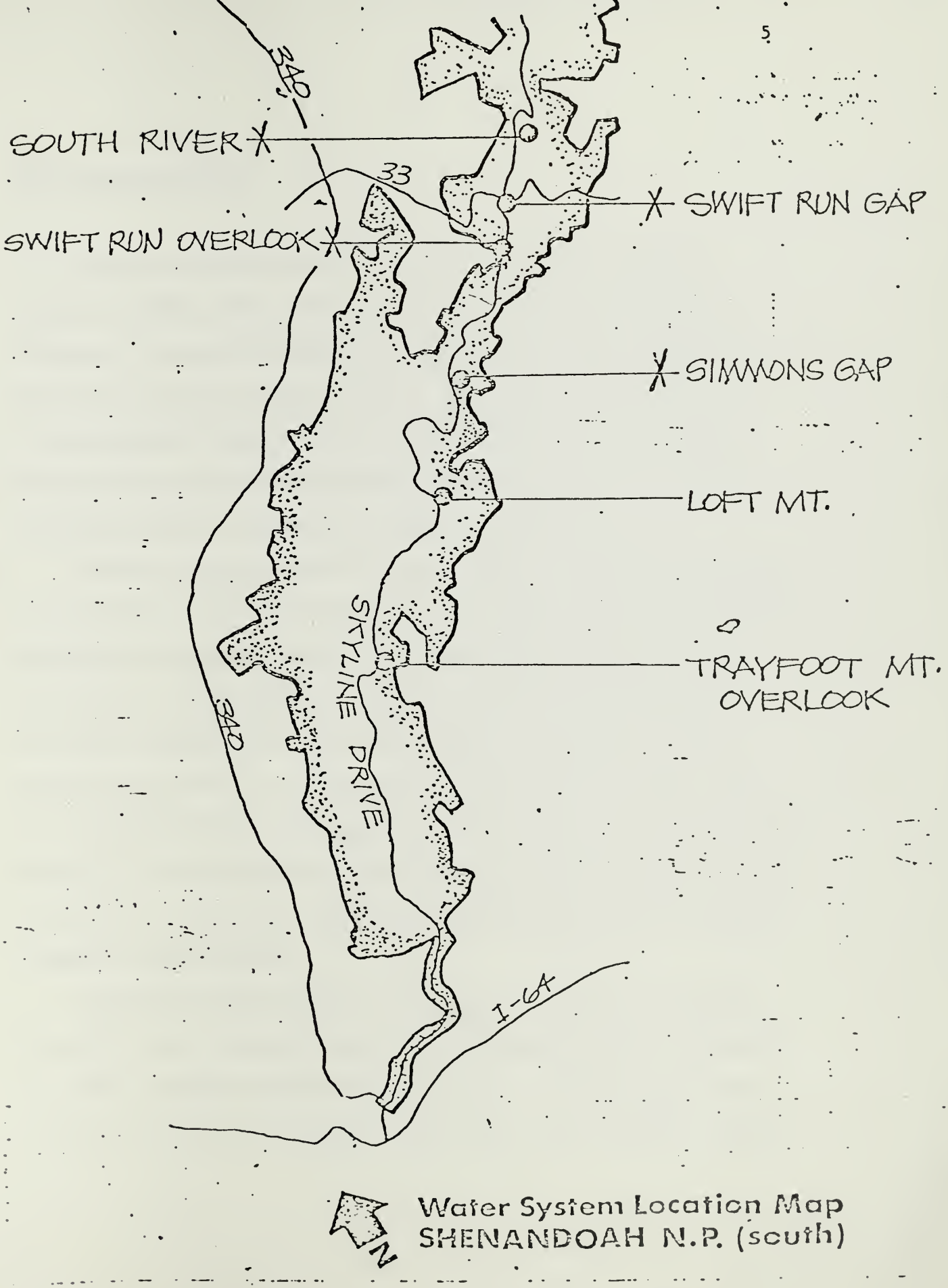

340
SOUTH RIVER
33
SWIFT RUN GAP
SWIFT RUN OVERLOOK
SIMMONS GAP
LOFT MT.
SKYLINE DRIVE
TRAYFOOT MT.
OVERLOOK
340
I-64
N
Water System Location Map
SHENANDOAH N.P. (south)

Figure 3

Environmental Setting

Shenandoah National Park is located within the Blue Ridge Mountains roughly between the towns of Front Royal and Waynesboro, Virginia. The park is nearly 75 miles long and varies in width from less than one mile to about 13 miles. The western boundary touches on the Shenandoah Valley and the eastern boundary on the Piedmont. Although the park is characterized as montane, within the boundaries variation exists in vegetation, topography, hydrology, etc.

The soils are described as "stony, shallow, rapidly drained, and best suited to supporting woodlands and related wildlife" (NPS 1976:16). The soil is very rocky along the mountain crest, developing into a stony loam on rounded mountain ridges and side slopes. The nature of the soil is dependent partly on the bedrock from which it derives. Porter's stony loam, a very dark-brown, highly organic surface layer and a yellowish-brown sandy clay loam subsoil, develops on granodiorite bedrock. It is usually less than three feet deep but varies with slope and elevation. Oak, pine, hemlock and mountain laurel is its natural vegetation (NPS 1976:16).

Greenstone bedrock develops into a mantle known as Meyersville stony silt loam. The soil has a dark, reddish-brown silt loam surface layer with a dark-red silty clay loam subsoil. Natural vegetation on this soil consists of redbud, black locust, birch, dogwood, poplar,

oak, and hickory. Downslope the soil becomes more extensively developed and less rocky. Along the mountain foothills, the Halewood series is found. This soil derives from Potter's and Meyersville soils. Unison and Dyke Series are found on gentle, old, colluvial slopes and are characteristically dark, reddish-brown, clayey soils (NPS 1976:16).

The park is today (and was most probably in prehistory) rich in faunal and floral resources. Documented flora include nearly 1,400 species of plants (NPS 1976:17).

Based on predominate species, 11 vegetation types have been described in the park. In the undisturbed upland areas, chestnut oak, red oak, black oak, and white pine predominate. In the lowlands and adjacent to streams, scarlet oak and hemlock are common. Early successional forests contain black locust, black birch, Virginia pine, white pine, sassafras, staghorn sumac, and smooth sumac. Common exotic plant species are tree-of-heaven, princess tree, and Japanese honeysuckle. Virtually all the park's vegetation represents various stages of succession resulting from human activities, i.e., farming, timbering, etc. (NPS 1976:17-18).

Over 59 species of mammals are present today in the park. Birds, amphibians and reptiles, representing numerous species (200 of birds alone), are present (NPS 1976:18).

CULTURAL SETTING

The prehistory and history of Virginia is yet an emerging story. Investigations in the Shenandoah National Park constitute one of the first directed studies of the Blue Ridge Mountains and the archeological resources which they contain. In large part, the picture emerging is based on the work of Dr. Michael Hoffman, formerly of the University of Virginia, Charlottesville, and his students. Dr. C. G. Holland, also of the University of Virginia, has done some of the pioneering work in Virginia, along with Dr. William Gardner of the Catholic University of America, whose work in the Middle Shenandoah Valley has produced definitive data on Valley prehistory.

In reference to the park specifically, only a preliminary picture is available for the cultural history of the park. Approximately 100 sites, 71 surveyed and 27 reported, are known to exist in the park and span a time range of approximately 8000 years. The earliest occupation in the park is given at 6000 B. C. (Hoffman, Foss and Vernon 1977:21). A survey of historical sites and structures revealed the location of 800 sites within the park boundaries dating prior to creation of the national park. Archival research indicated that between 30 and 40 mid-18th to 19th century structures existed in the park. Other historical research has centered on the people who occupied the park area during acquisition and creation of the national park--their life-ways and culture.

METHODOLOGY

Field methodology was designed to intensively test project impact areas to determine the location, extent and nature of any cultural deposits. Procedure included surface examination and subsurface testing.

Where grass and small plants obscurred surface visibility, 50 cm by 50 cm test units were excavated with shovels and trowels. Grass sod was carefully cut and pulled back before testing. After removal of the fill and taking notes and photographs, the dirt was replaced in the cavity and the sod set back into place. At the completion of excavation, few traces of the test unit could be detected.

Test units were excavated at 5-meter intervals along a transect through each impact area. Original design specified screening the fill from each test unit through 1/4-inch mesh hardware cloth but because of the large size and numbers of stones in the fill, careful troweling and fill examination were performed. Each test unit was excavated to a depth of 5-10 inches (12-25 cm) below present ground surface. The more shallowly dug test units contained large amounts of boulder-size stone which precluded deeper excavation. This depth was determined adequate for the project area since along the ridge soil development has been minimal. Thus artifacts deposited 5,000 years ago would still be near the surface in most areas. However, where deposition has been building up the land surface, buried

cultural deposits would not be located by this technique.

Photographs, both black and white and color, were taken during all phases of the field investigations. In the discussion that follows, the area surveyed and to which recommendations apply is encircled in heavy black ink.

IFB 4840-79C: SKYLAND SEWER RELOCATION

Original specifications for IFB 4840-79C, Sewer System Repairs, entailed no ground disturbance except along existing sewer lines. When it became apparent that one section at Skyland would require relocation, an archeological survey and assessment of the impact area became necessary. Accordingly, the author met with the DSC engineers, who provided a sketch map of the probable relocation routes, indicated on the accompanying figure as Route 1 and Route 2 (Fig. 4). In the field, subsurface and surface examination proceeded along these specified routes. Where vegetation obscured surface visibility, 50 cm by 50 cm test units were excavated at 5 meter intervals. The fill was carefully examined for artifacts and/or features. Each route survey is discussed below:

Route 1: A total of 14 test units were excavated along this transect. A typical test unit fill was composed of a brown clay loam underlain by a stoney, red clay subsoil. Survey lines crossed two roads and a sparse lawn (Fig. 5). The shallow depth of the topsoil observed would seem to indicate degradation of the land surface in this area. Test Unit Nos. 1-11 yielded modern window glass fragments, wire nails, a metal washer fragment, road tar, and pieces of plastic (see Appendix for inventory). This area is shown on Fig. 4 with cross-hatching.

NOTES:

1. THE EXACT LENGTH OF LINES "NOT IN SERVICE" IS UNKNOWN.
2. THE NUMBER IN PARENTHESIS NEAR BUILDING NAME, REPRESENTS THE NUMBER OF RENTAL UNITS WITHIN EACH BUILDING.

LEGEND:

- EXISTING MANHOLE & SEWER LINE, FIELD LOCATED.
- EXISTING MANHOLE & SEWER LINE NOT LOCATED IN FIELD & LOCATION OBTAINED FROM EXISTING N.F.S. DRAWINGS.
- EXISTING CLEANOUT, FIELD LOCATED.
- EXISTING CLEANOUT NOT LOCATED IN FIELD & LOCATION OBTAINED FROM EXISTING NFS DRAWINGS.
- BUILDING SERVICE CONNECTION FOUND IN FIELD OR TAKEN FROM EXISTING N.F.S. DRAWINGS.
- BUILDING SERVICE CONNECTION, LOCATION ESTIMATED BY N.F.S.

N.I.S. - NOT IN SERVICE.

- - - - Archeological survey transect

Figure 4

SKYLAND : SEWER RELOCATION

Drawing No. 41,033 134 A

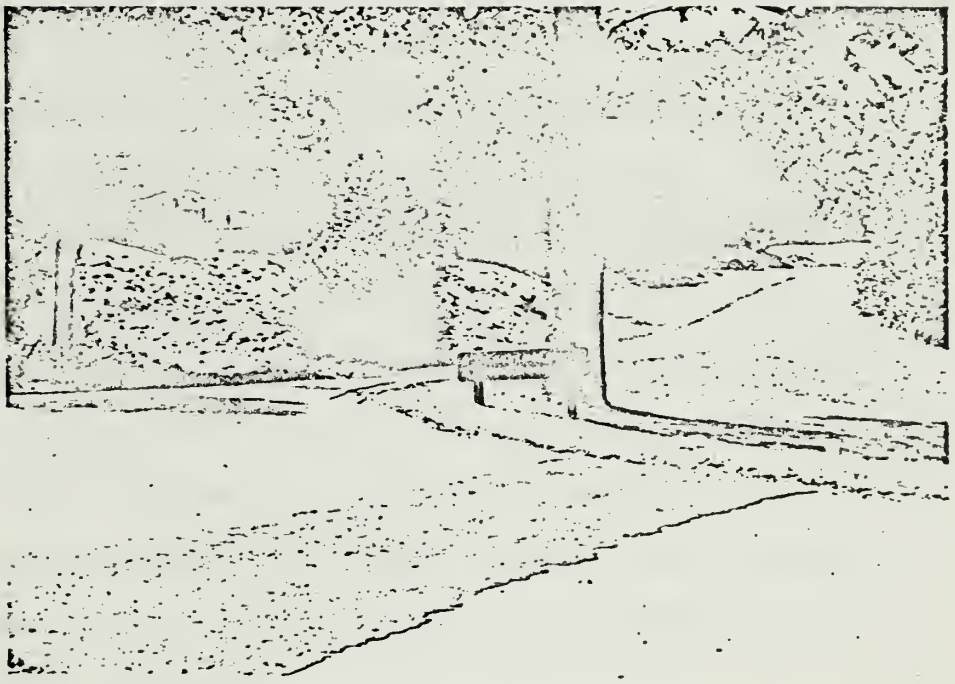


Figure 5: Skyland Sewer Relocation
Route 1 looking southeast

All of the cultural material recovered is modern and construction-related. There was no evident association with any architectural feature, and reference to earlier photographs of Skyland Resort (NPS, Shenandoah National Park files) did not give evidence of any structure at this location. Only small amounts of the modern construction debris were recovered although a few artifacts were found at depths as low as 5 inches below the present ground surface. I conclude that the area has been graded fairly recently and the cultural material is most likely modern, construction-related debris which was scattered on the ground and subsequently partially buried when the area was leveled. This thin and scattered deposit is not considered to be of any historical significance.

Route 2: The grass cover was very sparse in this area, allowing visual inspection (Fig. 6). No test units were excavated. The only artifact found was a clay sewer pipeline fragment. The paucity of evidence for cultural deposits suggests that no significant deposits would be impacted by proposed construction.

Discussion: No additional archeological investigations are recommended along either Route 1 or Route 2. Either relocation route would be acceptable from a cultural resource management perspective.

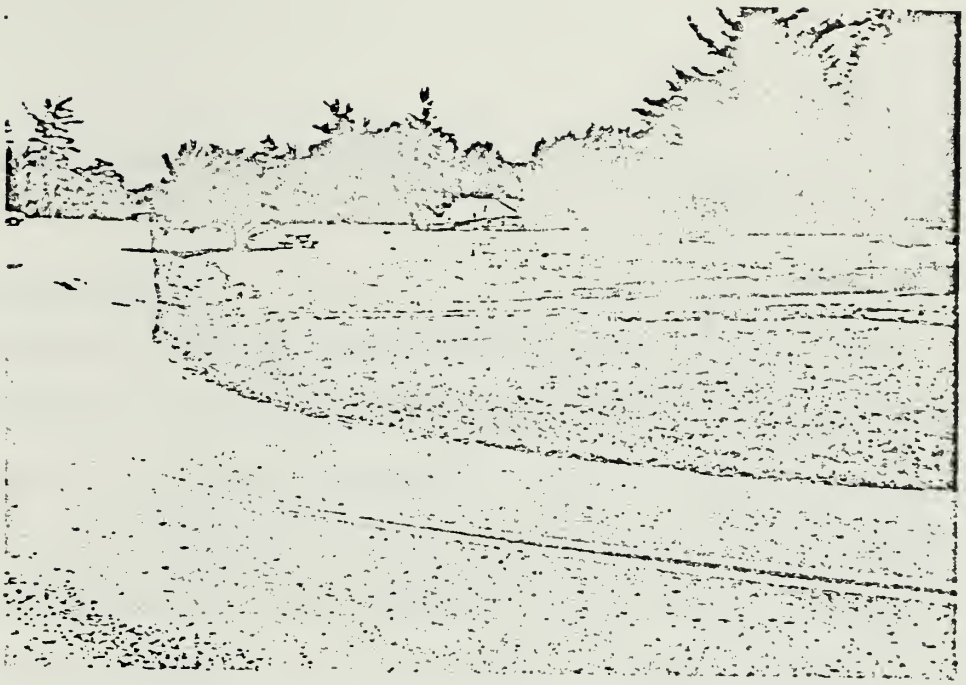


Figure 6: Skyland Sewer Relocation
Route 2 looking south.

PACKAGE 260: CHLORINATION OF WATER SYSTEMS

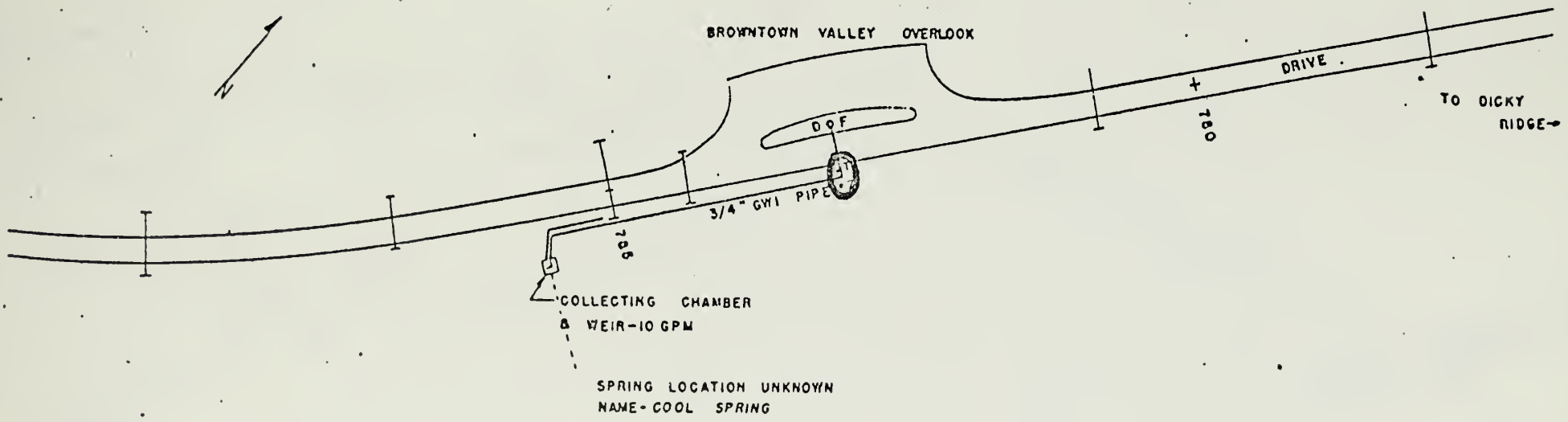
Browntown Valley Overlook

A chlorination pit will be constructed off the east side of the road near the water line crossing to the drinking fountain, resulting in approximately 5 cubic yards of excavation (Fig. 7). Two test units were excavated at the proposed location. One is located just southeast of the Skyline Drive pavement; the second is atop the bank. Between Test Units 1 and 2 the slope is very steep with a vertical distance of about 4 feet. Both test units contained large amounts of stone and the lower was obviously disturbed by road construction. No artifacts were recovered.

Elkwallow

Construction plans at this location will involve 3 cubic yards of excavation to enlarge an existing meter pit and additional trenching between the meter pit and the reservoir (Fig. 8). Three test units were excavated in the vicinity of the reservoir, the water meter pit and the well. Test Unit 1 was located in what appears to be a recently graded area; less than 0.25 inches of topsoil was noted to overlay a stony, red clay subsoil. Test Unit 2 was in a recently mounded area as evidenced in the mottled, disturbed fill. This conclusion is supported by the absence of any saplings or mature trees in this location. Test Unit 3 also revealed a thin layer of topsoil overlying a stony red clay subsoil. Artifacts were not recovered from any of the test units.

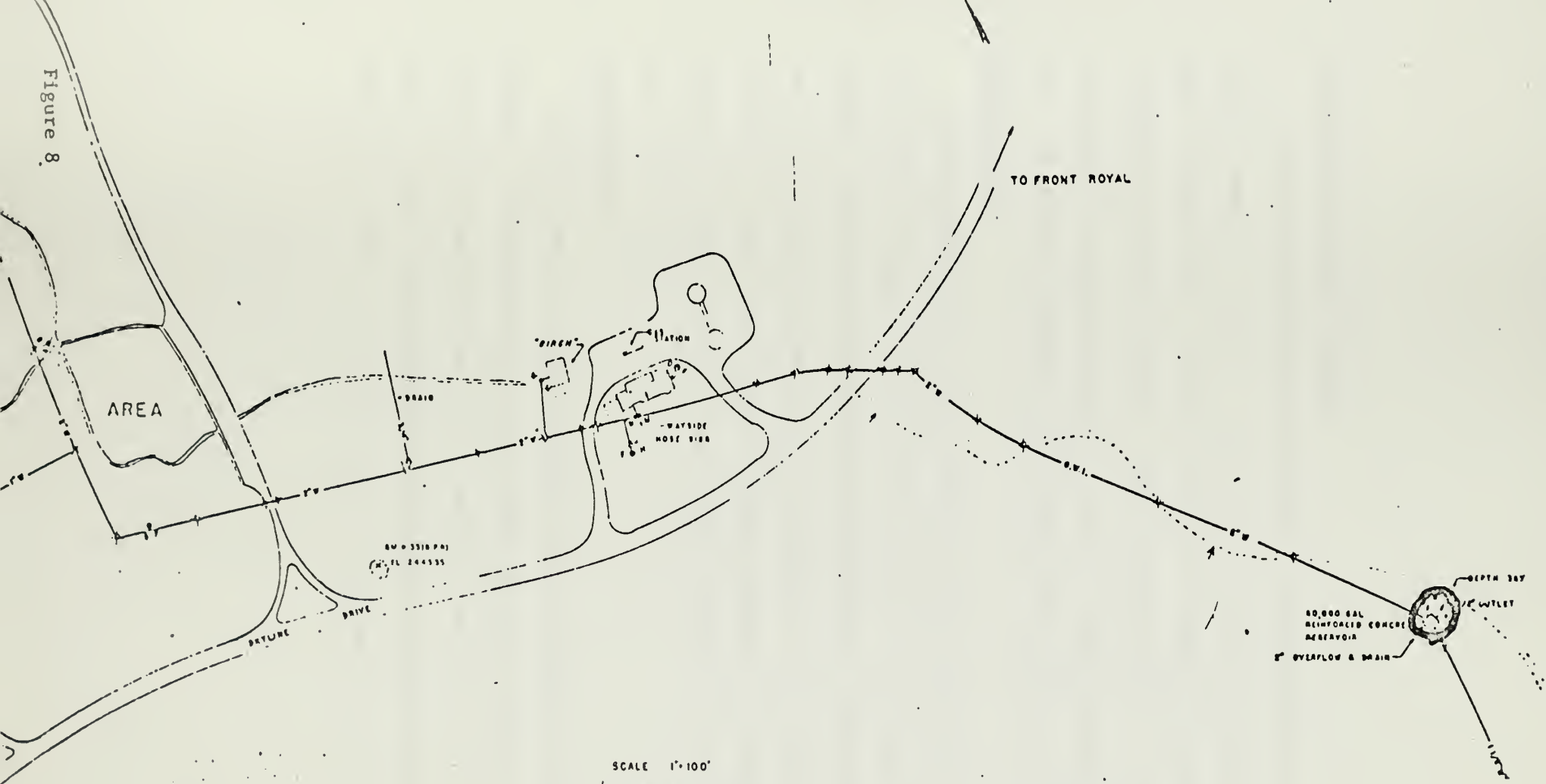
Figure 7



Browntown Valley Overlook
Water System
SHEN 260
NP-SHE 2769

SCALE 1"=100 before reduction

Figure 8.



ELkWallow
Water System
SHEN 260
NP-SHE 2761

Pass Mountain Parking Overlook

A new concrete pit will be installed approximately 310 feet from the reservoir (Fig. 9). Three test units were excavated in this area. A brown humus, less than 0.5 inches in depth, was underlain by a stony brown-red clay subsoil. The first Test Unit, No. 1, is 100 feet below the existing chlorinator pit (not shown on accompanying map). No cultural materials were recovered from any test unit.

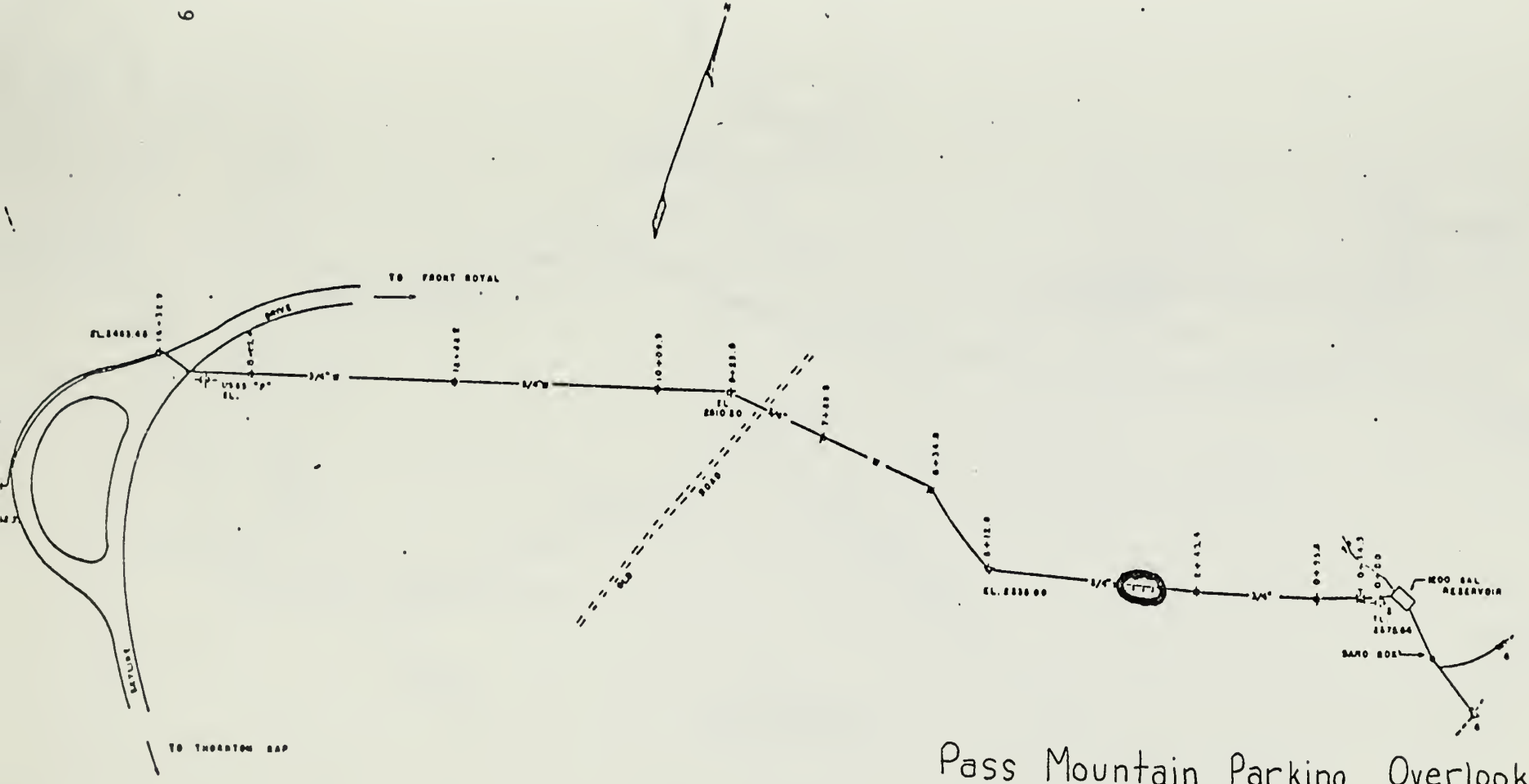
Thornton Gap

Construction plans at this location include installation of a chlorination pit approximately 300 feet from the reservoirs (Fig. 10). Two test units were excavated along the waterline at distances of 300 feet and 315 feet from the reservoirs (Fig. 11). Both units contained a thin (less than 1-inch) layer of humus underlain by red-brown clay subsoil with large amounts of stone. No artifacts were recovered from either test unit.

Headquarters

Installation of a buried pressure tank is planned for this location. Ground disturbance will affect the area adjacent to the chlorinator house northeast of the carpenter shop (Figs. 12, 13). Four test units were excavated to a depth of 8 inches below surface. Test units 3 and 4 both had disturbed fill; grass sod grew in and

Figure 9



BEFORE REDUCTION

Pass Mountain Parking Overlook
Water System
SHEN 260
NP-SHE 2784

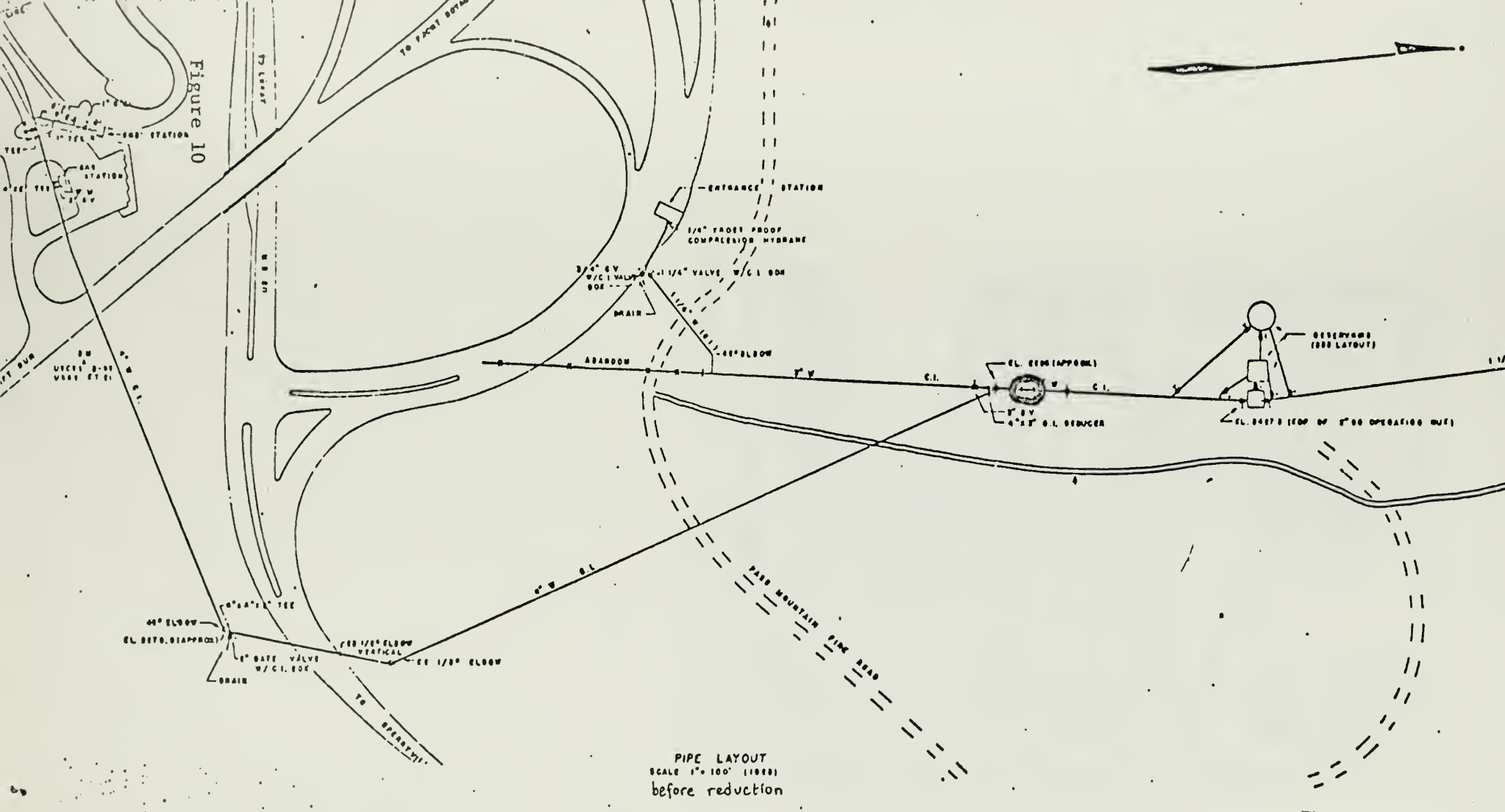


Figure 10

Thornton Gap
Water System
SHEN 260
NP-SHE 2760

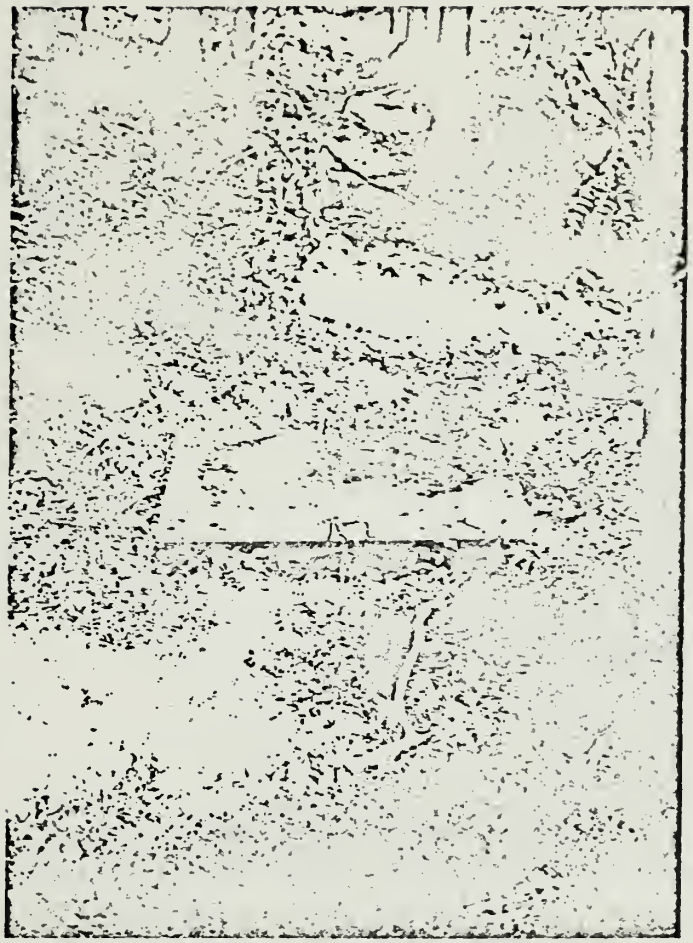
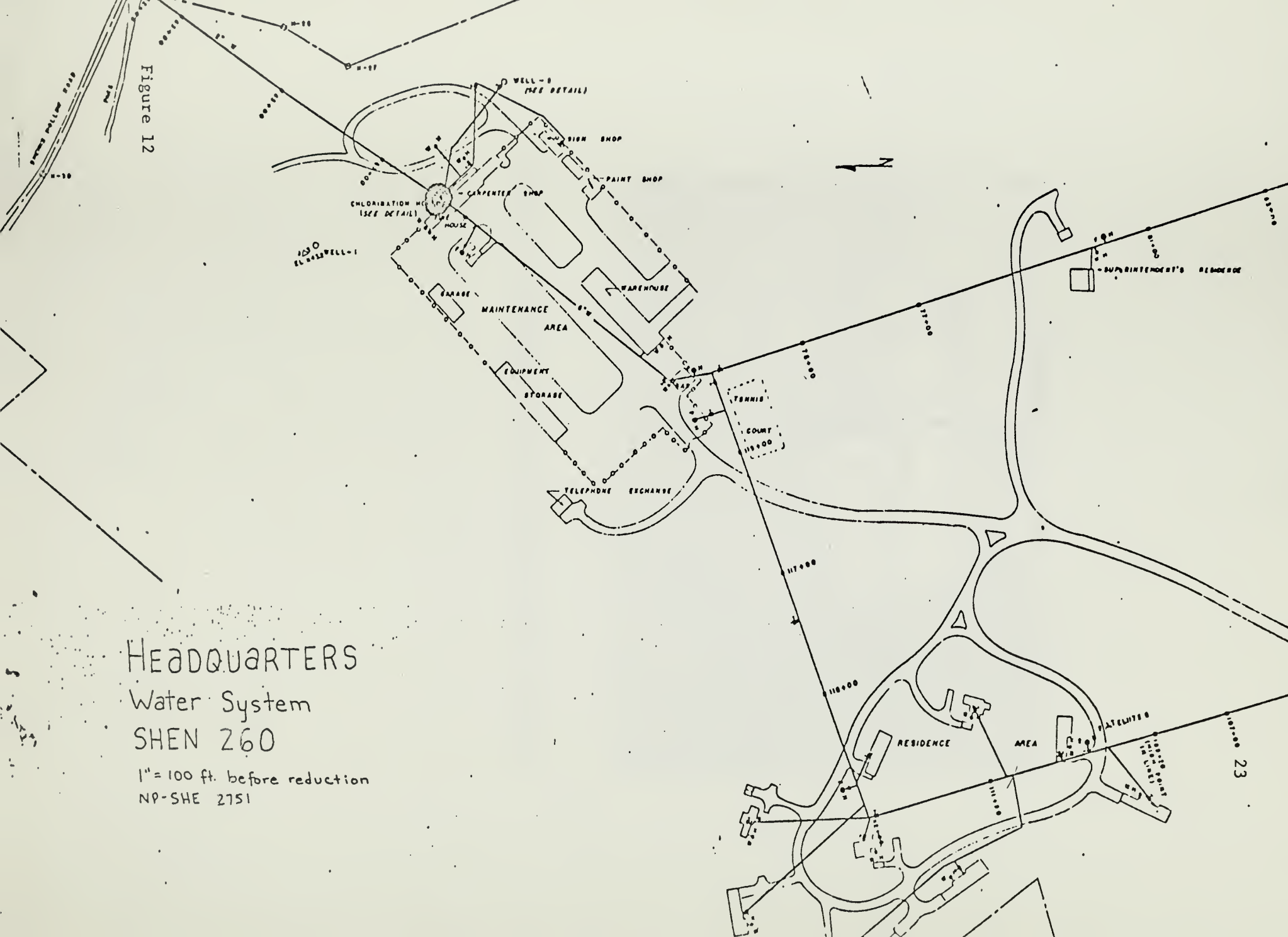


Figure 11: Thornton Gap, looking north.

Figure 12



HEADQUARTERS
Water System
SHEN 260

1" = 100 ft. before reduction
NP-SHE 2751

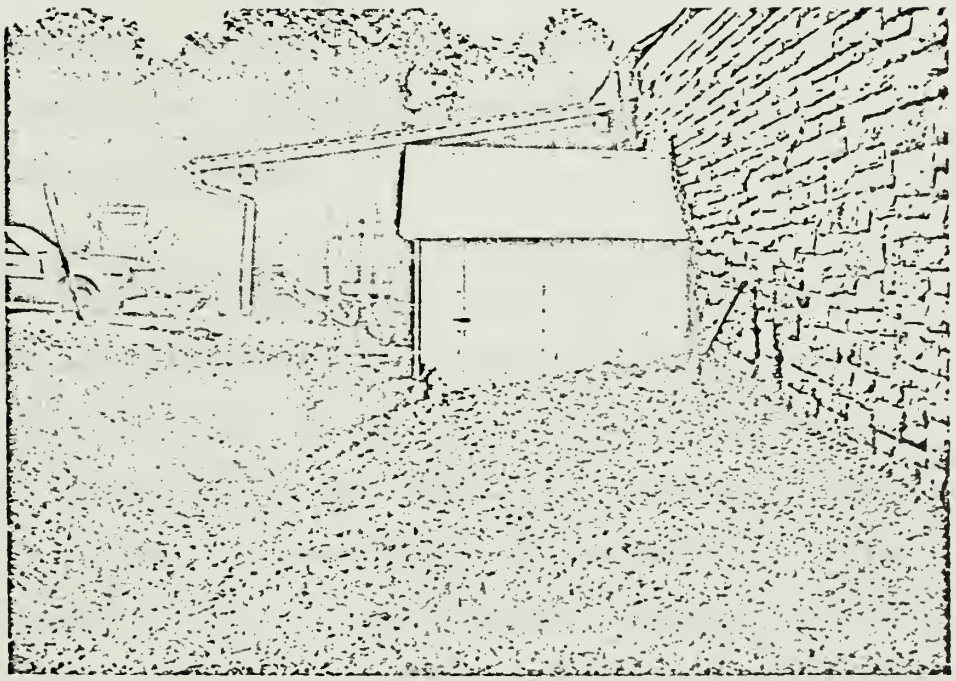


Figure 13: Headquarters, Carpenter Shop, looking southeast.

above a red, stony gumbo clay. Test Pit 4 contained some mortar and road tar to a depth of 3-inches. Test Pits 1 and 2 contained recent road gravel and soil profiles consistent with that of Units 3 and 4. No evidence for a significant historic or prehistoric cultural deposit was recovered.

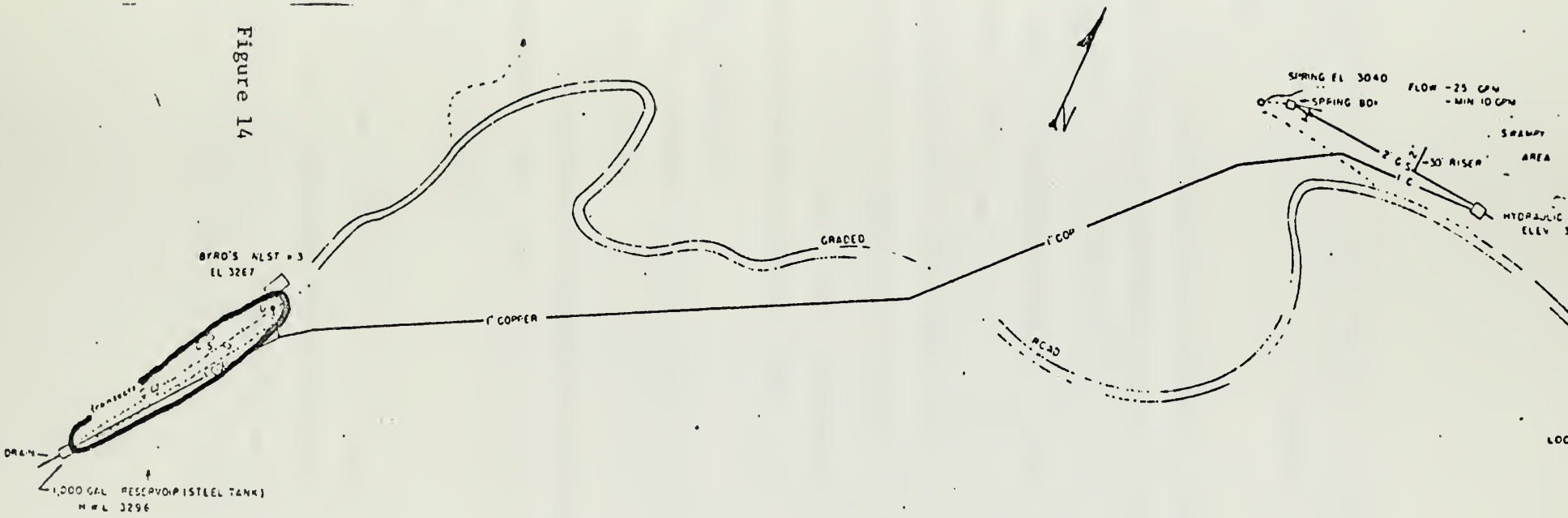
Byrds Nest 3

Excavation for a new three-quarter-inch line will disturb approximately 35 cubic yards in the area between the drinking fountain and the reservoir (Fig. 14). A total of 19 test units were excavated in the heavily vegetated area. The grade slopes down from the reservoir at 3,296 feet above mean sea level (AMSL) to 3,267 feet AMSL at the drinking fountain. At the lower elevations the test units revealed a deep, rich humus up to 8 inches below the surface with a lighter brown clay subsoil. The test pits closer to the reservoir had less topsoil and more clay and stones in the fill. No cultural materials were recovered although a modern camping canteen was observed on the surface. An interval of approximately 5 meters was maintained between test units placed along two transects between the reservoir and the drinking fountain.

Pinnacles

Construction in this developed area will take place at two different locations. Near the Ranger's residence, the existing water meter pit will be replaced and an underground power cable will be

Figure 14



SCALE 1"=100'
before reduction

Byrds Nest 3
Water System
SHEN 260
NP-SHE 2787

installed from the well to the pit. A chlorinator pit will be installed approximately 1,300 feet west of the water line crossing along Skyline Drive.

The chlorinator pit location was surveyed with 5 test units (Fig. 15). The test units revealed a stony clay subsoil with little topsoil development. No cultural materials were recovered.

Near the residence area, 5 additional test units were excavated from the existing meter pit to the well (Fig. 16). Since there was little topsoil but a very stony red clay or mottled brown and red clay subsoil, it appears that the area was graded. In support of this, we were informed that a Conservation Corps camp house had previously stood on this site (Fig. 17).

Hughes River Gap

The construction plans propose a concrete chlorination pit to be built adjacent to the spring box. The spring box is located south of the Hemlock Spring Parking Overlook approximately 120 feet along Skyline Drive (Fig. 18). Four test units were excavated with no artifacts recovered.

Skyland

Subsequent to fieldwork at this location, the plans for chlorination of the water system were altered to involve installation of equipment at existing facilities. Original plans specified installation of a chlorinator pit and chlorine contact tank about 700 feet from the

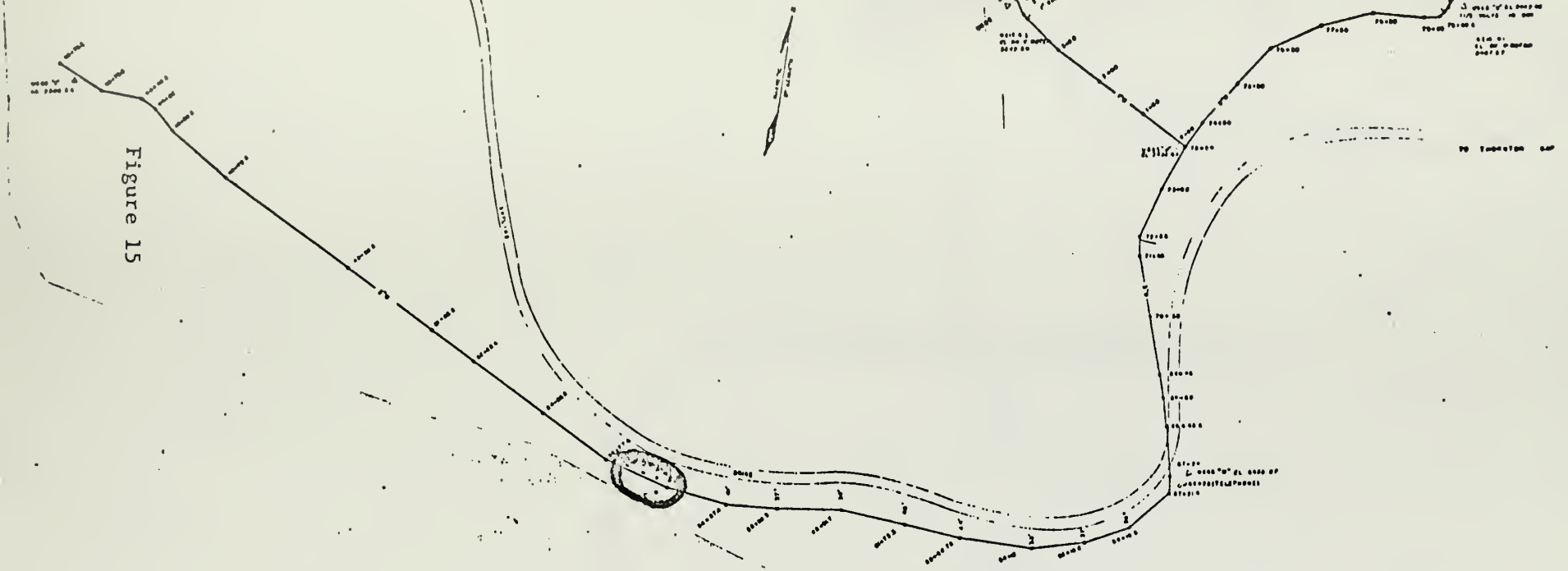


Figure 15

Pinnacles
Water System
SHEN 260
NP-SHE 2764

1" = 100 ft. before reduction

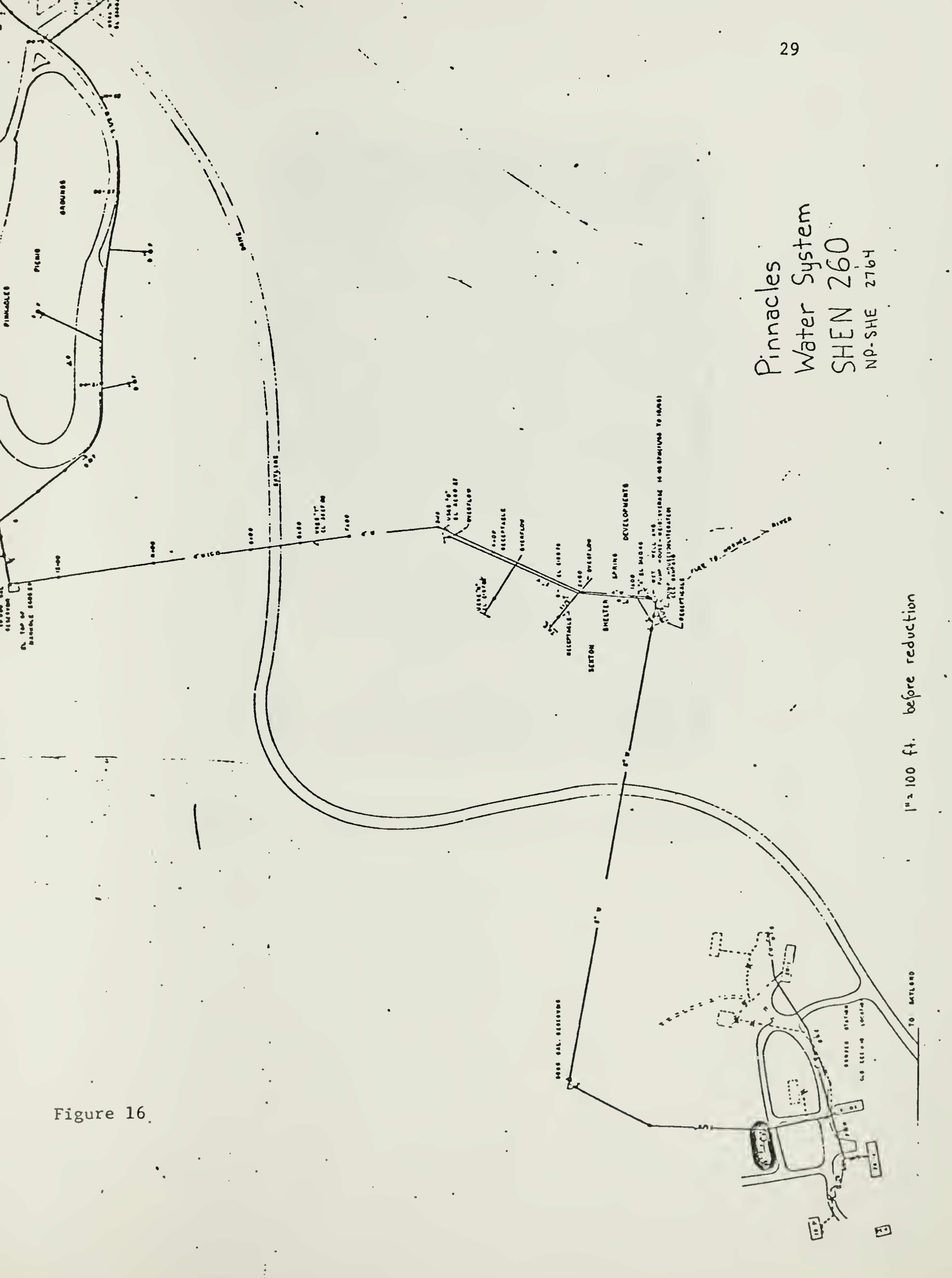

Pinnacles
Water System
SHEN 260
NP-SHE 2764
1"=100 ft. before reduction

Figure 16

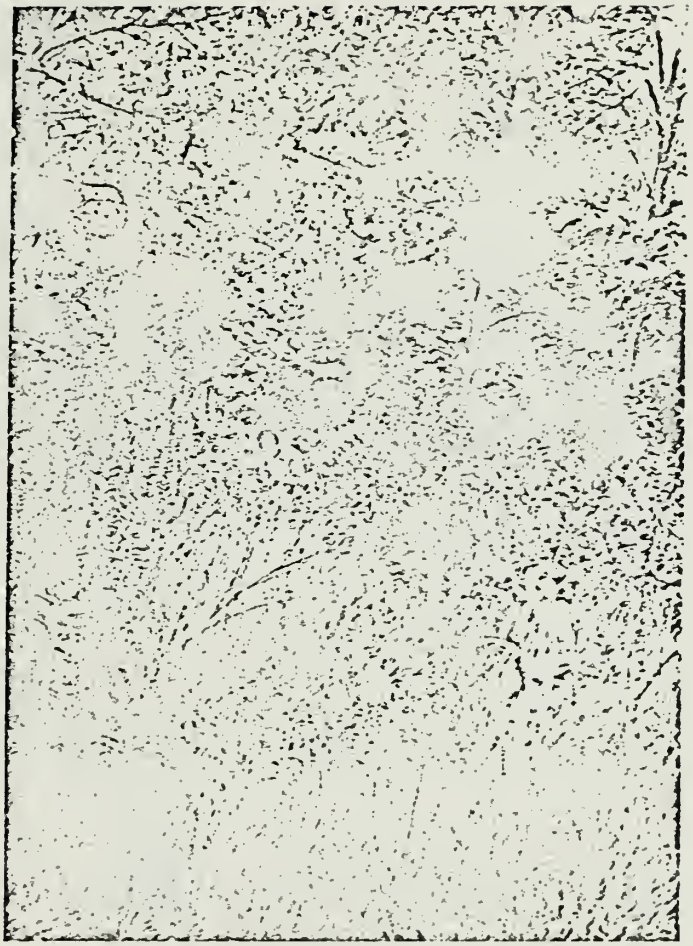


Figure 17: Pinnacles, Residence area looking west.

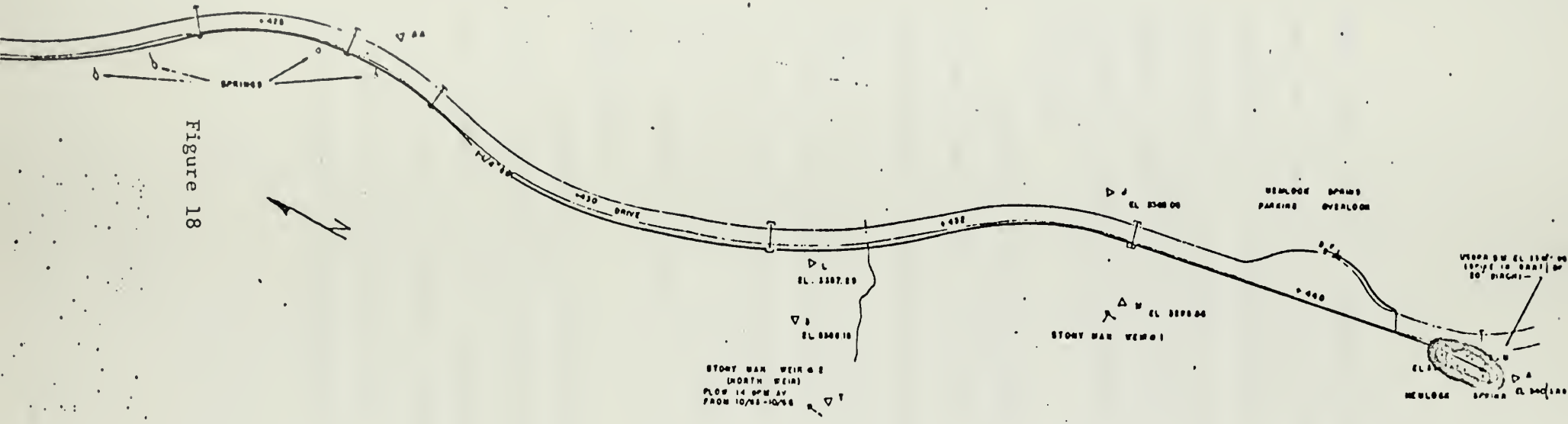


Figure 18

1"= 100 ft. before reduction

HUGHES RIVER Gap

Water System

SHEN 260.

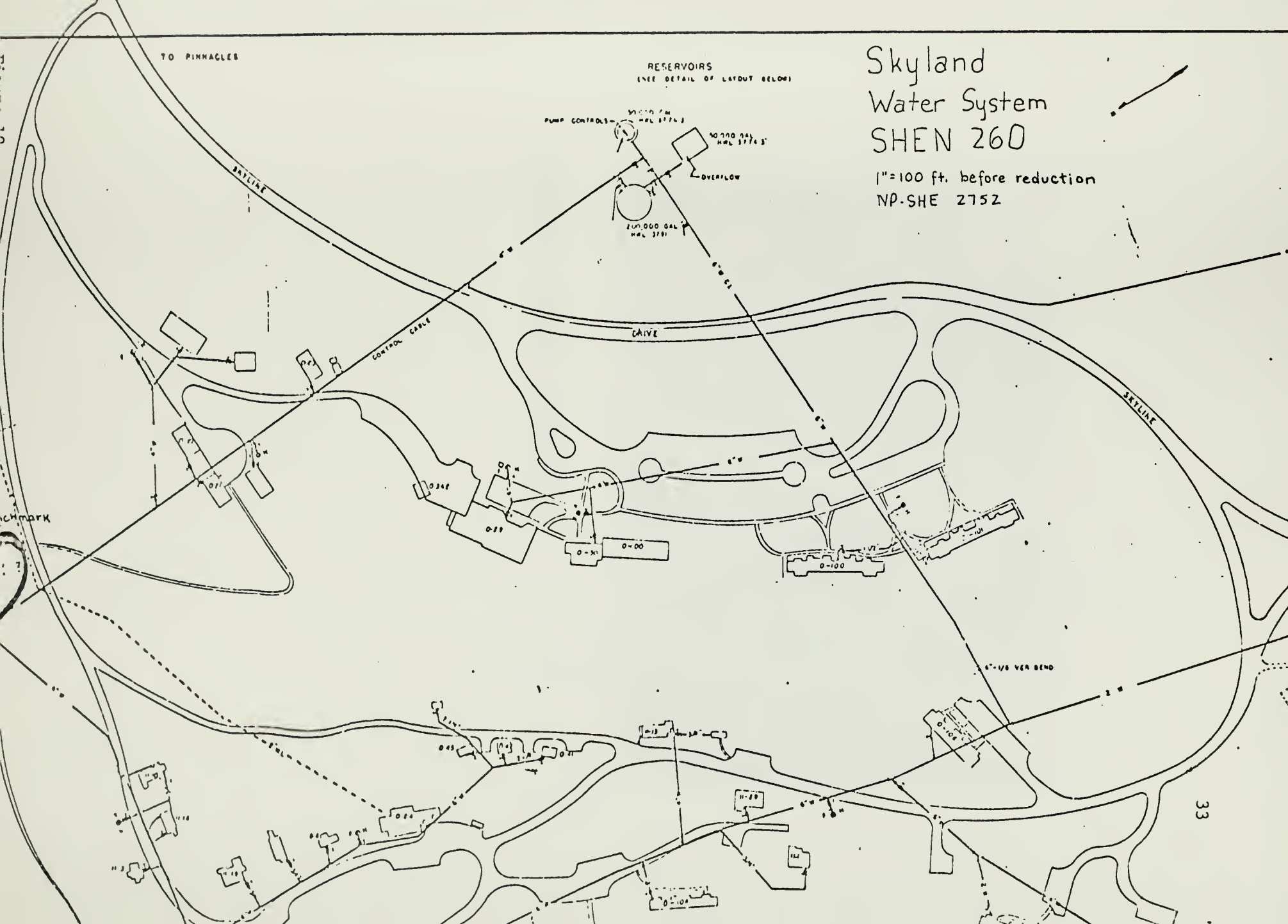
NP-SHE 2768

pump house (Fig. 19). Several attempts have been made by DSC engineers and the archeological crew to locate a valve where presumably the facility was to be installed (Fig. 20). Available maps are dated and roads shown on the existing maps are not always extant. Using a Brunton compass, pacing distances, and with verbal orientation by park personnel, an area was selected as the proposed construction site and surveyed.

A total of 9 test units were excavated to a depth of 4 to 7 inches below surface. The survey location is presently in a level, wooded area with extensive development of understory growth (Fig. 10). Test units were located in respect to a cement marker, 5 meters in each of the cardinal directions within the area bounded by Skyland access road the Appalachian Trail. Although a small amount of modern trash was observed on the surface (broken bottle glass), test units were culturally sterile.

Camp Hoover

A chlorinator pit and 20 feet of contact pipeline will be installed approximately 450 feet from the reservoir. Five test units were excavated, the first being located approximately 400 feet east of the reservoir along the waterline (Fig. 21). The soil profile was consistent from unit to unit--a decaying leaf and large rock cover underlain by gray-brown stony clay. Units 1 and 2 were more


Skyland
Water System
SHEN 260
1"=100 ft. before reduction
NP-SHE 2752
TO PINNACLES
RESERVOIRS
SEE DETAIL OF LAYOUT BELOW
PUMP CONTROLS
OVERFLOW
SKYLINE
DRIVE
CONTROL CABLE
SKYLINE
33

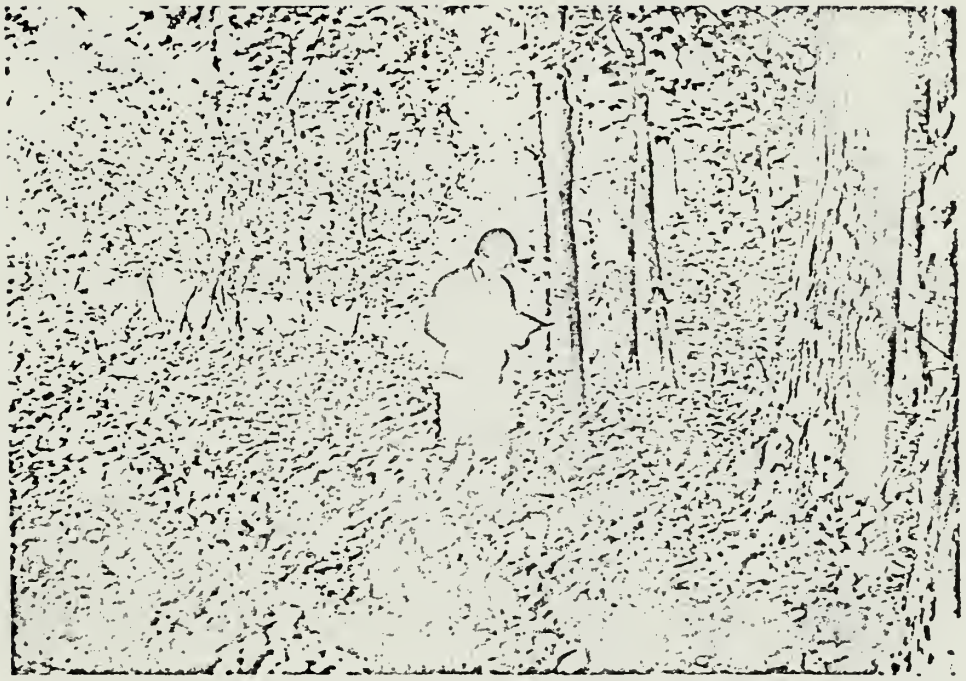
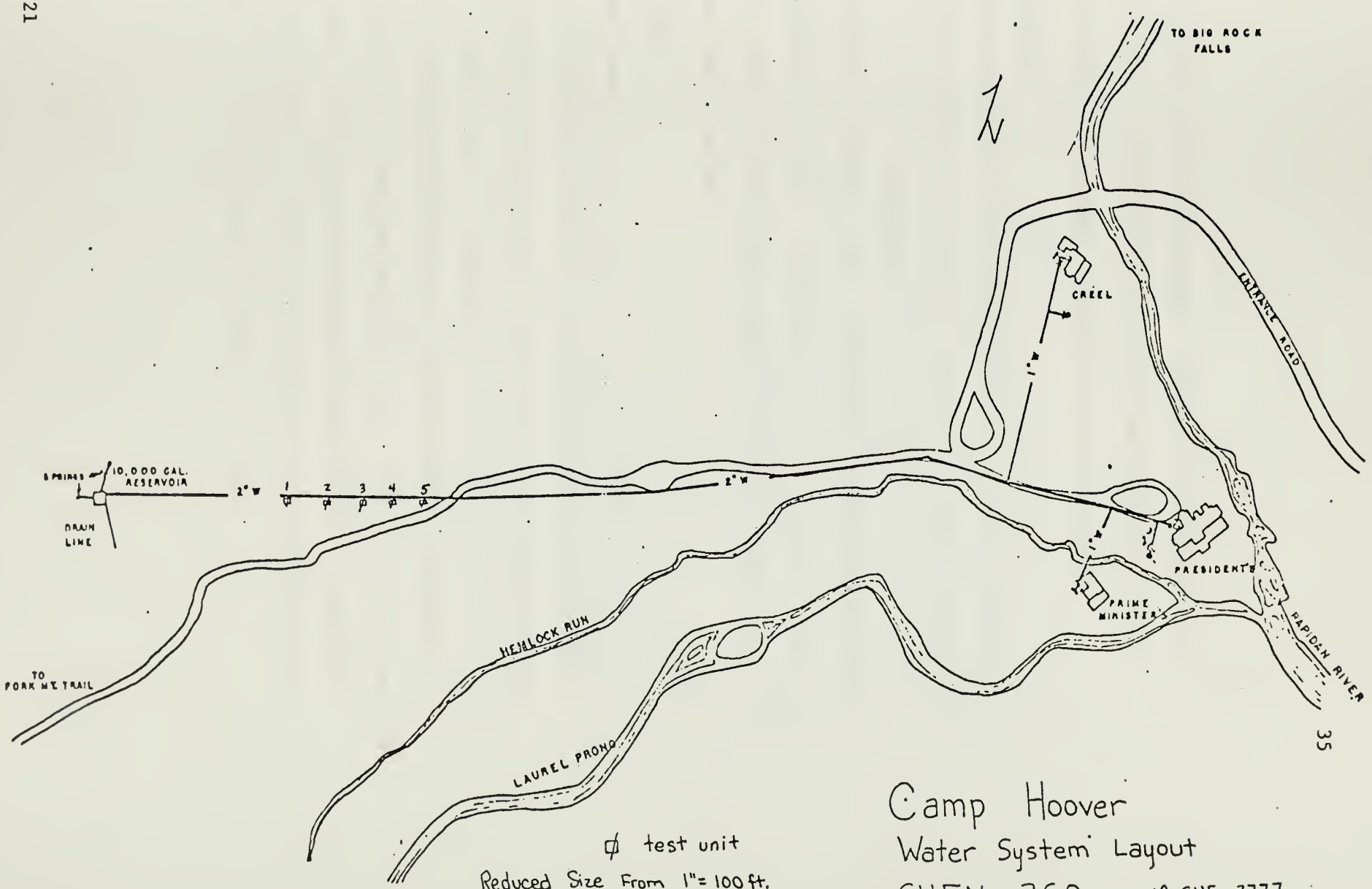


Figure 20: Skyland, looking west.

Figure 21



Ø test unit

Reduced Size From 1" = 100 ft.

Camp Hoover
Water System Layout
SHEN 260 NP-SHE 2777

rocky than those further downslope. The line surveyed was S75°W to the reservoir and intersected the road approximately 870 feet from the circle at the camp. No artifacts were recovered.

Lewis Mountain

Within the picnic area at Lewis Mountain, contact pipeline will be installed between the chlorinator pit and the picnic area roadway (Fig. 22). As the accompanying Figure 23 indicates, 3 test units were excavated. A typical test unit yielded brown sandy loam below the decaying leaf cover. The topsoil was 2 to 4 inches in depth and overlay a compact, yellow-brown subsoil containing large stones. No artifacts were recovered.

South River

Approximately 6 cubic yards of excavation will be necessary to construct a chlorinator pit on the transmission main within 30-40 feet of Skyline Drive(Fig. 24). The survey crew walked the water main path and along the drainage ditch which parallels the waterline. Because of the great quantities of rocks and their large size, it was not possible to excavate any test units. The surface was examined where clear of vegetation and plant and leaf cover was removed at 5 meter intervals to inspect the ground surface. No evidence was detected of cultural deposits or sites in the area.

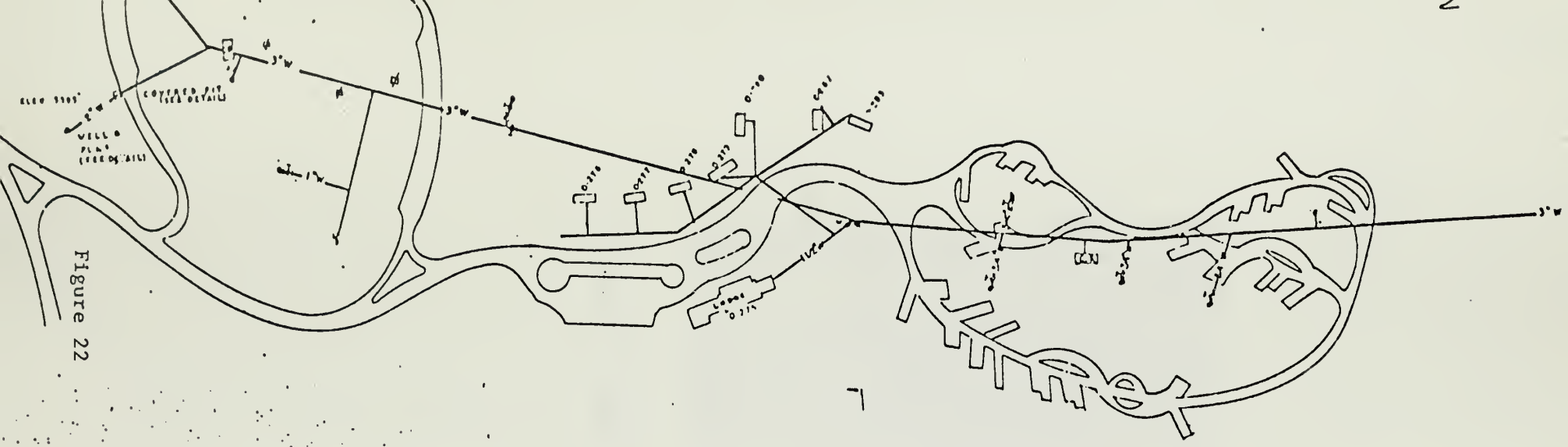


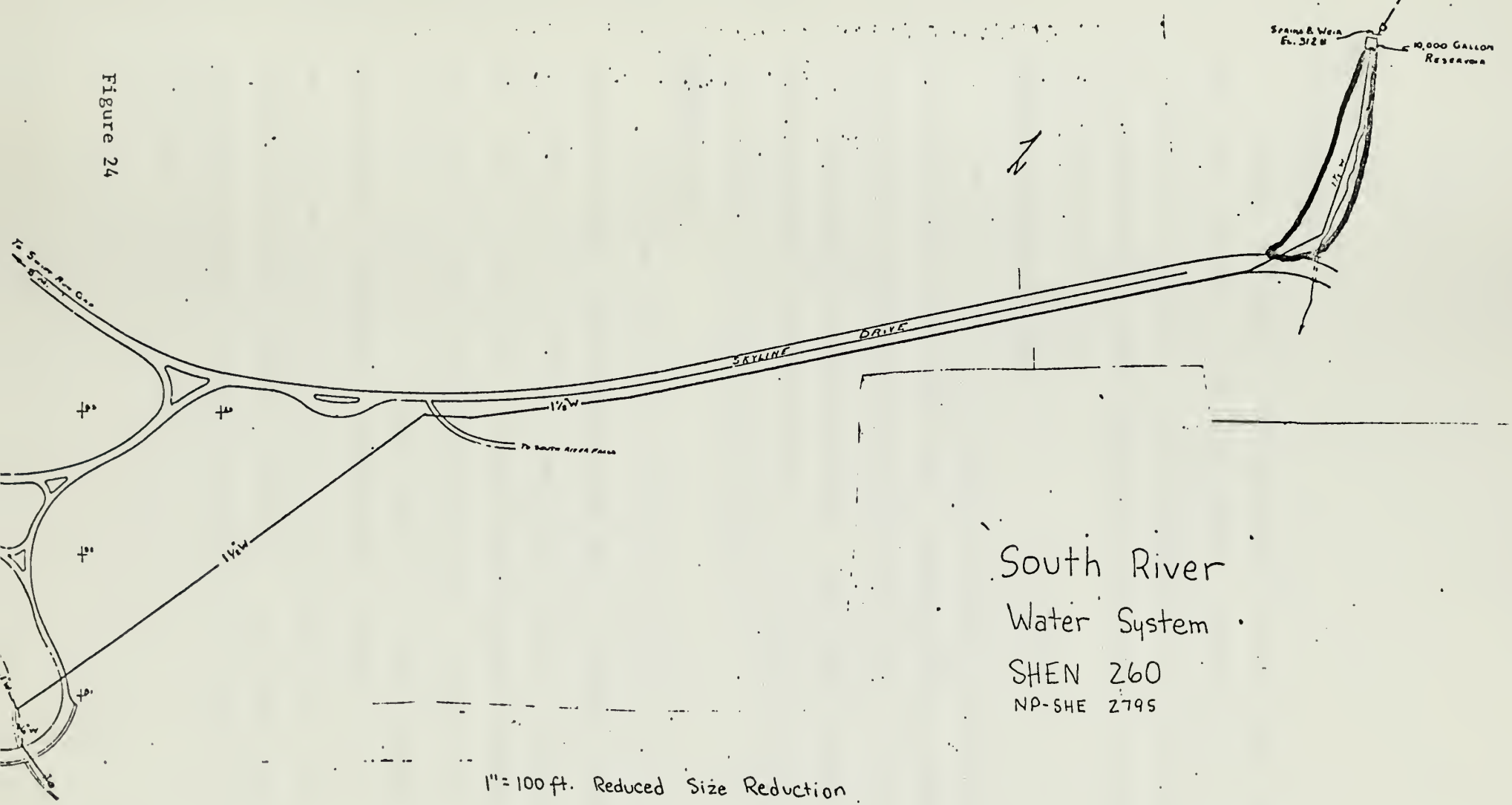
Figure 22

test pit

Lewis Mountain
Water System Layout
SHEN 260
1" = 100 ft. Reduced Size
NP-SHE 2757

Figure 23: Lewis Mountain, looking north.

Figure 24



South River
Water System
SHEN 260
NP-SHE 2795

1" = 100 ft. Reduced Size Reduction

Swift Run Gap

The area southwest of the access road was tested with seven test units placed in this potential borrow area (Figs. 25, 26). A typical soil profile of a test unit showed a 1-inch brown stony clay topsoil with a lighter brown stony clay subsoil. No cultural materials were recovered.

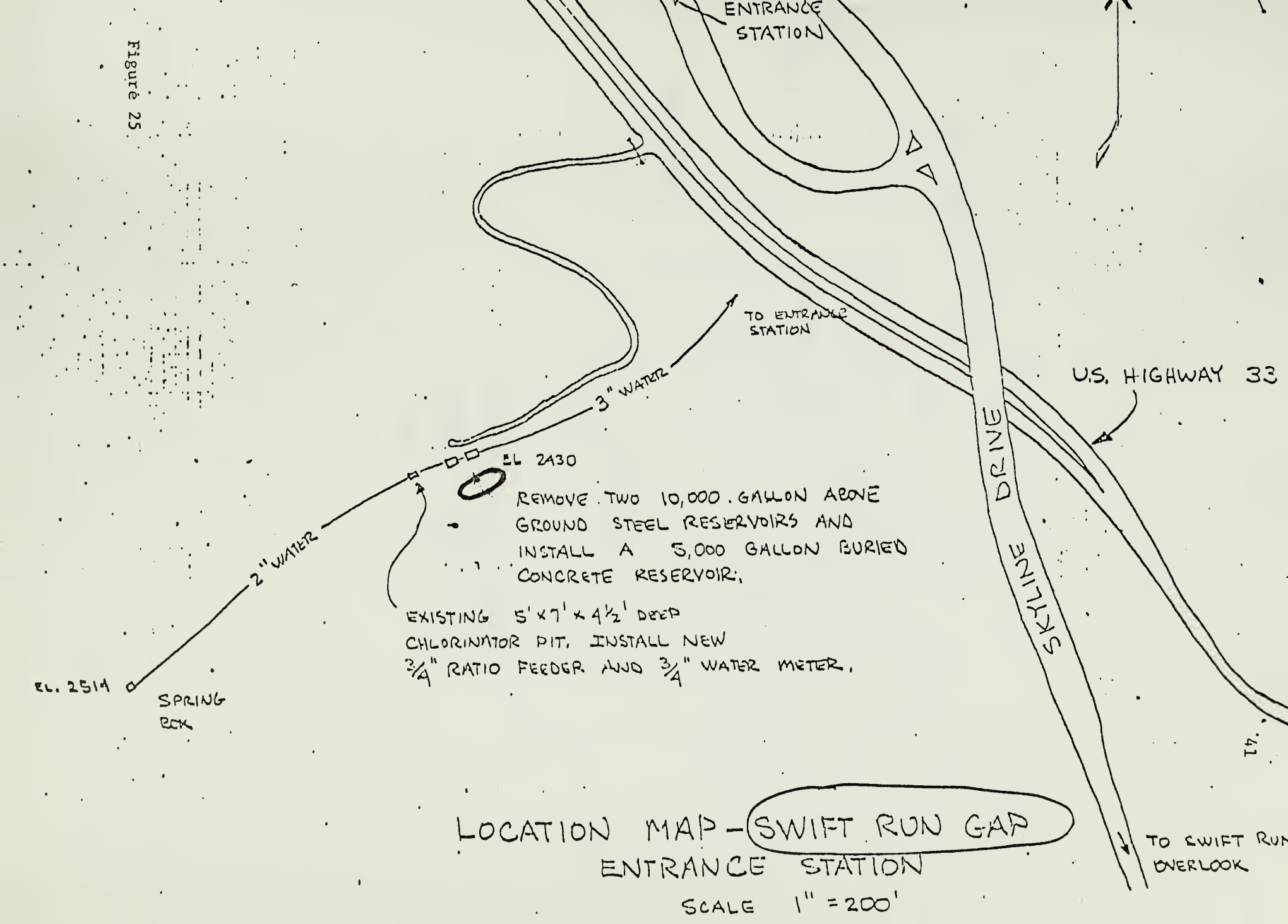
Swift Run Parking Overlook

A concrete pit is to be installed along the waterline just before it crosses Skyline Drive (Fig. 27). Two test units were excavated 20 and 26 feet respectively from Skyline Drive (Fig. 28). The road bank slopes steeply along this stretch. Test units revealed a loose brown stony clay topsoil underlain by a more compact, lighter brown clay subsoil. No artifacts were recovered.

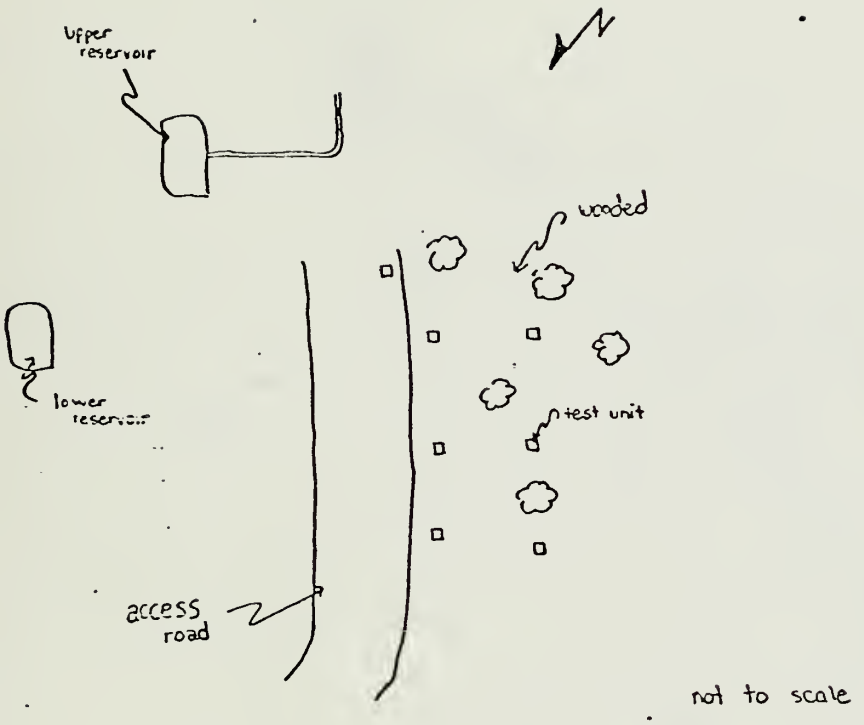
Simmons Gap

Chlorination pits will be constructed just above the reservoir and near the well discharge (Figs. 29, 30). In addition, 60 feet of pipeline will be installed downstream of the well chlorination pit. Four test units were excavated around the well discharge end and along the water line downstream (Fig. 31). A typical test unit indicated a brown stony clay loam topsoil with compact brown stony clay subsoil. No cultural materials were recovered. Six test units were excavated above the reservoir but the large size and great amounts of rock made excavation difficult. Very little topsoil development was observed, the top layer consisted primarily of decaying leaves and other plant remains.

Figure 25



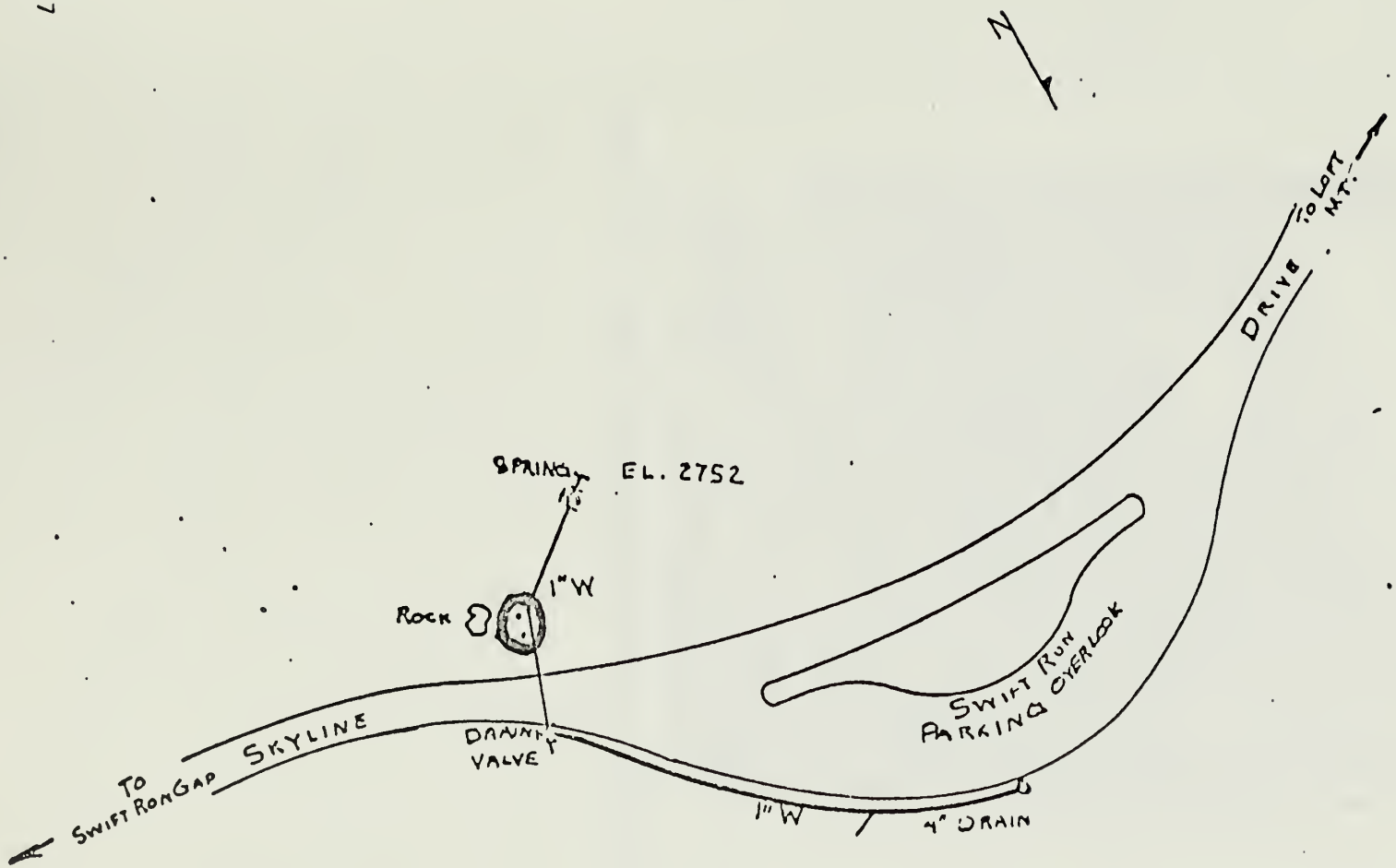
LOCATION MAP - SWIFT RUN GAP
ENTRANCE STATION
SCALE 1" = 200'



Swift Run Gap
SHEN 260
8-79

Figure 26

Figure 27



Swift Run Parking Overlook
Water System
SHEN 260
NP-SHE 2797

SCALE 1" = 100'

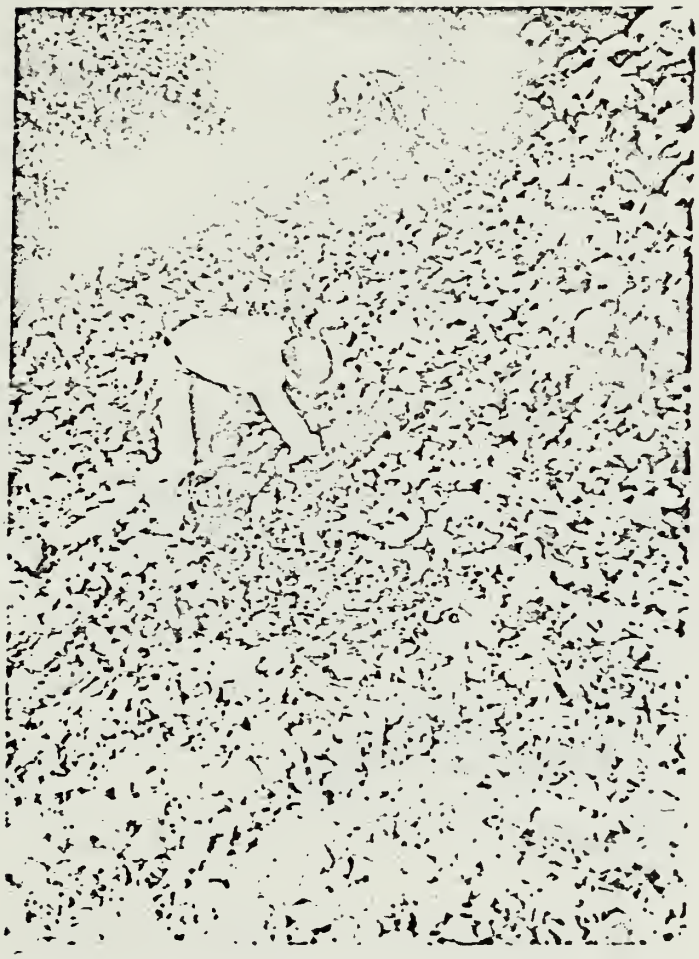


Figure 28: Swift Run Parking Overlook, looking south.

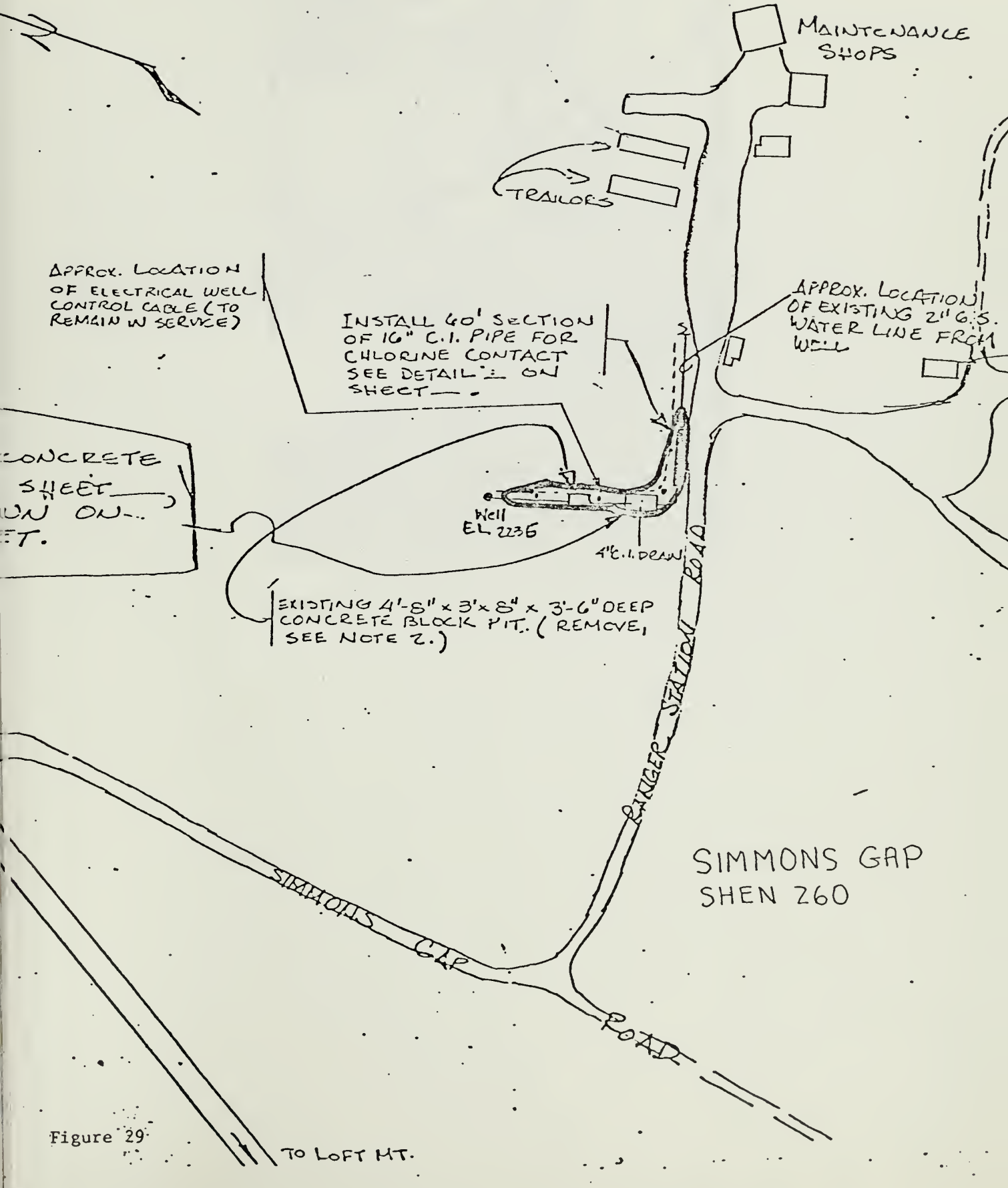

MAINTENANCE SHOPS
TRAILERS
APPROX. LOCATION OF ELECTRICAL WELL CONTROL CABLE (TO REMAIN IN SERVICE)
INSTALL 60' SECTION OF 16" C.I. PIPE FOR CHLORINE CONTACT SEE DETAIL ON SHEET —
APPROX. LOCATION OF EXISTING 2" G.I. WATER LINE FROM WELL
CONCRETE
SHEET —
UN ON —
ET.
Well
EL 2236
4"C.I. DRAIN
EXISTING 4'-8" x 3'x 8" x 3'-6" DEEP CONCRETE BLOCK PIT. (REMOVE, SEE NOTE 2.)
RANGER STATION ROAD
SIMMONS GAP
SHEN 260
SIMMONS GAP ROAD
TO LOFT MT.

Figure 29

Figure 31: Simmons Gap, looking south.

Discussion

Although a total of 17 locations were surveyed during this project, no historic or prehistoric sites were located. In fact, the only cultural material recovered was modern structural debris along Route 1 of the Sewer Relocation Project. Several factors affecting site location must be explored prior to making final conclusions and recommendations.

The procedures followed for this survey were quite intensive, consisting of surface and subsurface examination. The latter involved excavation of 50 cm by 50 cm test units along 5 meter intervals. This interval is in concordance with recommendations by Hoffman and Foss (1977:18) and although the fill was not screened, careful examination and troweling are comparable in results. The depth of excavation too is comparable to that of Hoffman and Foss (1977:19) since shallow stratigraphic tests are usually sufficient to locate sites in areas of little soil development. In sum, the negative survey results are probably not due to inadequate methodology, but reflect an actual scarcity of sites.

Additional factors affecting site location are the degree of disturbance and the amount of area covered. In this case, all of the survey locations were in developed areas and along water lines. The areas covered are small and were determined by construction plans, not their potential habitability. Under these conditions, it is less likely that sites will be located.

The final factor to be discussed is actually a series of related variables. As background, recall that an archeological site is the material remains left as evidence of past human occupation and/or activities. It is people who leave behind remains, and their choice for site location is a factor which must be taken into consideration. It is therefore profitable to examine results of previous surveys in the park and studies by archeologists which explore settlement systems.

Foss (1977) synthesizes and collates data available about sites within the park from a cultural ecological point of view. Two variables, landform and elevation, will be discussed (Table 1). Seven landforms are defined: hollows, ridges, upland basins, gaps, peripheral saddles, foothills, and mountain slopes (Foss 1977:30-39). Survey results indicated that a possible preference for hollows is demonstrated but Foss cautions that a bias in survey intensity toward this particular landform may be misleading. Concerning elevation, 28 percent of the sites located during survey were found in elevations ranging from 1001-1500 AMSL, 24 percent 1501-2000 AMSL, 22 percent 2001-2500 AMSL, and 20 percent 3001-3500 AMSL. In this project 88 percent of the survey locations are at 2001-3500 AMSL, elevations which contained 46 percent of the sites found in the previous survey. This would indicate that it is unlikely to find sites in the 1979 survey because the survey locations are predominately on ridges and because they are not at the most likely elevations.

Based on the above discussion, results of the survey can be viewed with a high degree of reliability, and the conclusion that the planned construction will not result in disturbance of any significant archeological sites is presented with confidence. The level of intensity of field examinations is considered sufficient and no further archeological investigation at these specific locations is recommended.

TABLE 1

SURVEY LOCATIONS: TOPOGRAPHIC DATA

		Landform	*Estimated Elevation
1.	Browntown	ridge	2890
2.	Elkwallow	ridge	2420
3.	Pass Mountain	ridge	2460
4.	Thornton Gap	gap	2427
5.	Headquarters	foothills	1143
6.	Byrd Nest 3	ridge	3267
7.	Pinnacles	ridge	3350
			3230
8.	Hughes River Gap	gap	3380
9.	Skyland	ridge	3515
10.	Camp Hoover	ridge	2400
11.	Lewis Mountain	ridge	3390
12.	South River	ridge	3128
13.	Swift Run Gap	gap	2365
14.	Swift Run Parking	ridge	2715
15.	Simmons Gap	gap	2255

* Sources include topographic maps, Heatwole 1978, water systems maps.

RECOMMENDATIONS

On the basis of the results of the literature search and on-site examinations, I recommend that construction according to plans proceed. If project locations are altered and the revised plans involve additional land disturbance, archeological investigations will be necessary at the new locations. In the event that cultural material is discovered during construction, the work must be halted and a DSC archeologist contacted for an on-site evaluation of the archeological resource.

APPENDIX: Artifact Inventory

LOCATION: Skyland, Route 1

Provenience	Description
Test Pit No. 1	1 sherd; brown-glazed (one surface) earthenware found 1 inch below surface (B.S.)
Test Pit No. 2	1 metal washer fragment; 1-inch diameter; found 1 inch B.S.
Test Pit No. 3	1 black colored plastic fragment
Test Pit No. 6	3 yellow colored glass fragments, 1-1/4 by 1 inch in size. 1 tar fragment, 3/4 by 3/4 inch in size 5 clear glass fragments, all less than 1-inch square; 1 textured but pattern indeterminant 2 wire nails all found between 5.5 and 6 inches B.S.
Test Pit No. 7	1 metal fragment, slightly bent; 1-5/16 inch long, 1/8-1/4 inch width, 1/16 inch thick; 2 inches B.S. 1 clear glass fragment; 6 inches B.S..

Provenience	Description
Test Pit No. 8	2 clear glass fragments, 1/4 by 1/2 inch in size; 1 flat, 1 slightly curved; both found approximately 1.5 inches B.S.
Test Pit No. 9	1 clear glass fragment; 6 inches B.S. 1 metal fragment, ball shaped, 1/4 inch in diameter; 3 inches B.S.
Test Pit No. 11	1 wire nail, 4 inches B.S.

LOCATION: Skyland Route 2

Provenience	Description
SURFACE; 35 meters northeast of manhole cover	1 clay sewer pipe fragment; 1/2 inch thick, 3 inches square; brown-glazed earthenware

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